

REMARKS/ARGUMENTS

Prior to this Amendment, claims 1-20 were pending in the application.

Claim 1 amended to include the limitations of dependent claim 6, which is cancelled, and to clarify that the single code entry is a programming statement in the programming language.

Independent claim 11 is amended to include the limitations of dependent claim 12, which is cancelled, and dependent claims 14 and 15 are amended to provide correct antecedent basis.

Independent claim 16 is amended similar to claim 1 to clarify that the code entry is a programming statement in a programming language and also is amended to include the limitations of dependent claim 18, which is cancelled.

After entry of the Amendment, claims 1-5, 7-11, 13-17, 19, and 20 remain for consideration by the Examiner.

Claim Rejections Under 35 U.S.C. §102

The Office Action rejected claims 1-6 and 11-14 under 35 U.S.C. §102(b) as being anticipated by U.S. Pat. No. 5,239,617 ("Gardner"). The rejection of these claims is traversed based on the following remarks.

From reading Applicant's Background, the invention is addressing problems with learning how to program in a new programming language when compilers require an entire program or subroutine to be entered to properly compile and provide limited feedback on errors when compiling is performed. Debugging software is intended for skilled programmers and does not provide feedback to a student on a line-by-line basis and/or based on single programming statements. As a result, the prior compilers and debugging programs made it difficult to enter a single programming statement, to have that statement compiled/executed, and then have the effects of its execution quickly shown to the student. Applicant's claimed invention addressed these deficiencies and relatively simple examples of its use can be seen in Figures 3-5 in which statements in a programming language are

entered, checked for proper syntax and language rule-compliance, executed if valid, and their effect (semantic effect) shown in real time and in this example, in a single window/interface. Gardner fails to teach these concepts and does not support an anticipation rejection of the pending claims.

Specifically, claim 1 calls for "receiving a single code entry comprising a programming statement in the programming language from the user." Gardner fails to teach such receiving. The Office Action cites Gardner at col. 4, lines 66-68 for teaching this limitation. At this section, Gardner teaches that system commands can be entered and, later, indicates that feedback/help will be provided based on such system commands. However, as discussed at col. 5, lines 1-13, system commands are passed to the operating system for a validity determination. These "commands" are not "single code entry comprising a programming statement in the programming language" as called for in claim 1. Instead, these system commands are more likely commands such as "log on", "CD MYDIR" (as shown at col. 9, lines 1-32) or the like that are understandable by an operating system/processor without compilation (e.g., without processing including "comparing the code entry to a set of syntax and language rules for the programming language" as called for in claim 1). For these reasons, Gardner fails to teach each limitation of claim 1, and Applicant requests that the rejection based on this reference be withdrawn.

Claims 2-5 depend from claim 1 and are believed allowable over Gardner for at least the reasons provided for allowing claim 1. Further, claim 2 calls for the processing of the code entry to compare syntax of the code entry "to a set of syntax rules for the programming language." Gardner fails to teach this limitation as it only discusses syntax of system commands and does not teach comparing syntax rules for a programming language with a programming statement provided in that programming language. Claim 4 calls for a code entry history portion for displaying not only the received code entry but "previously received and processed code entries." The Office Action cites col. 9, line 1 to col. 12, line 15, but Gardner

appears to only discuss showing a system command and a suggested system command(s) but not programming statements entered prior to the most recent statement (e.g., Applicant's Figure 5 for a representative "Code Entry History"). For these additional reasons, claims 2 and 4 are not anticipated by Gardner.

Independent claim 11 is directed to a computer program product with limitations similar to those of claim 1 but in differing form. Hence, the reasons for allowing claim 1 over Gardner are applicable to claim 11. Claims 13 and 14 depend from claim 11 and are believed allowable at least for the reasons for allowing claim 11. Further, claim 13 is believed allowable over Gardner for the reasons provided for claim 4. Also, claim 14 calls for the programming statement to be executed when no syntax error is found. Gardner describes executing a system command but provides no teaching of executing a programming statement.

Claim Rejections Under 35 U.S.C. §103

Also, the Office Action rejected claims 1, 6-10, 11, and 14-20 under 35 U.S.C. §103(a) as being unpatentable over U.S. Pat. No. 5,204,960 ("Smith") in view of U.S. Pat. No. 6,550,056 ("Mizumoto"). The rejection of these claims is traversed based on the following remarks.

As described above, claim 1 calls for receiving a single code entry comprising a programming statement in the programming language, and processing this single code entry including executing the single code entry when no syntax and language errors are identified. Then, providing a visual cue to the user based on such processing. In this way, a single line of code can be entered and processed to provide a student quick feedback on an isolated programming concept. The combination of Smith and Mizumoto fails to teach this claimed method.

The Office Action cites Smith for teaching or suggesting all the limitations of independent claims 1 and 11. However, there is no suggestion in Smith that a single code entry comprising a programming statement can be entered and processed. Instead, at the cited Figure 2, step 200 and elsewhere, Smith teaches receiving and acting on a compile request, with Figure 1 and elsewhere discussing code segments, data segments, and definitions that may be local or global. These appear to be programs or at least subroutines that would include a plurality of code segments. Hence, Smith fails to teach the statement by statement capability called for in claims 1 and 11. Mizumoto is not cited for overcoming this deficiency but is instead cited for teaching a semantic display mechanism/function. As a result, the combined teaching of these two references fails to teach at least the receiving and processing steps/functions of claims 1 and 11. Claim 14 depends from claim 11 and is believed allowable for the reasons for allowing claim 11 over these two references.

Mizumoto is cited for teaching the use of visual cues and the like to inform a user of the effects of executing a single code entry or programming statement, i.e., for rejecting claims 7-10, and 15-20. As discussed above, Mizumoto is not cited for teaching the receiving of a single code entry comprising a programming statement, and hence, independent claims 1, 11, and 16 are believed allowable over Smith for the reasons provided for claim 1, and Mizumoto fails to address this deficiency. Hence, claims 1, 11, and 16, and claims 7-10, 14, 15, 17, 19, and 20 which depend from these independent claims, are allowable over the combined references.

Further, Applicant disagrees that Mizumoto teaches displays that include visual cues representative of the effects of executing a single programming statement as called for in the claims. For example, independent claim 16 calls for a semantic view engine to display "a semantic view to the user...includes effects of execution of the code entry including created variable values, object configurations, and arrays." At cited portions of Mizumoto and elsewhere, Mizumoto teaches that

its debugging device can be used to determine the values in registers. However, there is no teaching of running/executing a single line of code or a programming statement and in response displaying the effect of such execution. In other words, the registers can be inspected but where does Mizumoto teach running one programming statement and showing its effects. In practical terms, a student may not understand the meaning of a plurality of registers relative to a single executed statement. For this reason alone, Mizumoto fails to teach the semantic engine of claim 16.

Further, Mizumoto fails to show displaying object configurations and arrays. The Office Action states Mizumoto teaches the display of "the state of all variables." However, this does not show displaying "object configurations" such as those shown in Applicant's Figure 15, for example. This is very useful in learning to program in Java and other object-oriented programming languages in which inspection of registers does not provide the same learning opportunities/feedback. For this additional reason, claim 16 is believed allowable over Mizumoto.

Claims 17, 19, and 20 depend from claim 16 and are believed allowable for at least the reasons provided for claim 16. Further, claim 19 calls for not only a line-by-line execution and display of corresponding effects but also that the line is executed so as to build on a "previously entered code entry." This is not shown in Mizumoto or Smith.

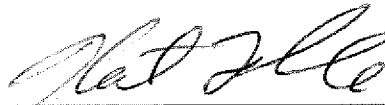
Dependent claims 7-10 are believed allowable at least for the reasons provided for allowing claim 1. Further, claim 8 calls for the semantic view to include the type, name, and value of a variable assigned in the code entry. Figures 1 and 8 cited in Mizumoto do not show this limitation when considered in conjunction with col. 8, line 66 to col. 9, line 6. Claim 9 calls for displaying objects, and this is not shown by Mizumoto. For these additional reasons, claims 8 and 9 are believed allowable over these two references.

Conclusions

Based on the above remarks, Applicant requests that a timely Notice of Allowance be issued in this case.

No fee is believed due for this submittal. However, any fee deficiency associated with this submittal may be charged to Deposit Account No. 50-1123.

Respectfully submitted,



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Kent A. Lembke, No. 44,866
Hogan & Hartson
(720) 406-5378 Tel
kalembke@hhlaw.com